

Fire Ant Control

The Two-Step Method and Other Approaches

Bastiaan M. Drees¹, Paul Nester², Wizzie Brown²,
 Molly Keck², and Kathy Flanders³



When it comes to insect pests, fire ants would probably top everyone's list! Red and black imported fire ants (*Solenopsis invicta* and *Solenopsis richteri*) are invasive species and their painful bites can injure or kill livestock, wildlife, domestic animals, and humans. Their large mounds (as many as 300 per acre) are unsightly and often damage mowers and other equipment. Fire ants also infest buildings and can damage electrical equipment by chewing on wire insulation.

In the United States, fire ants cost \$6 billion a year, including the cost of insecticides (see [An Economic Impact of Imported Fire Ants in the United States of America](#)). The Two-Step Method and other approaches described here can lower that cost while reducing environmental damage and improving fire ant control. Knowing your options will allow you to make better choices to protect your family, pets, and property.



White pustules from fire ant stings on human hand. (Photo courtesy of B. M. Drees)

Identifying Fire Ants

There are hundreds of ant species in the southern United States, including some native fire ant species, and most of them are considered beneficial insects. Collectively, ants till more earth than

earthworms, and some prey on other insect pests to help reduce pest numbers.

Fire ants usually build mounds and will build them almost anywhere—in the open or next to a building, tree, sidewalk, or electrical box. When the mound is disturbed, fire ants can emerge quickly from any opening created by the disturbance or from several natural holes, and begin biting and stinging. They will readily run up vertical surfaces.

Worker fire ants are dark reddish-brown with shiny black abdomens, and vary in size from about 1/16- to about ¼-inch long. Fire ants are similar in appearance to many other ants, so make sure you have correctly identified the species before attempting to solve your ant problem (see [Imported Fire Ants: What Are Fire Ants?](#)). If you are uncertain about the species, call your local Extension office.



Fire ant queen (largest) surrounded by workers and eggs. (Photo courtesy of B. M. Drees)

¹Professor and Extension Entomologist, ²Extension Program Specialists, Texas A&M AgriLife Extension Service, The Texas A&M System;

³Professor and Extension Entomologist, Alabama Cooperative Extension System

Controlling Fire Ants

Most people (about 80 percent according to one survey) try to control fire ants by treating individual ant mounds. Mound treatments are expensive, up to \$2 or more per mound, and require lots of time and labor if you have much land to treat. You can easily use too much insecticide, which may lead to environmental contamination if rain washes the insecticide into lakes and streams. To be effective, the mound treatment must kill the queen(s). Otherwise, the colony will survive. Some nests may go undetected. Even an area where every mound has been treated can soon be reinfested by fire ant colonies migrating from untreated areas or floating there on floodwater. Also, deep-dwelling colonies that escaped mound treatment can quickly form mounds after a soaking rain. It is usually more effective and less expensive for homeowners to treat the entire yard with a bait product designed for broadcast application.

Fire ants cannot be eliminated entirely because it is not possible to treat all infested areas. There may not be a single best method for fire ant control, especially in large areas. Your objective should be to find the method or methods that are most cost-effective, environmentally sound, and fit your tolerance level for fire ants. In areas where these ants do not present problems, doing nothing is one option. Another option is to implement an integrated pest management (IPM) program. IPM incorporates cultural (nonchemical), biological control methods and the selective use of insecticides.

Control Products

- ◆ **Biological control:** Government and university researchers have imported and tested natural enemies of fire ants, such as parasitic decapitating flies from South America (see [Natural Enemies of Fire Ants](#)). These natural enemies have successfully established in areas where they have been released. They are not available to the general public; however, ongoing release programs in all infested states are making decapitating flies more prevalent in the environment. These flies are extremely host-specific to the imported fire ants, making it impossible for them to negatively impact other ant species. Biological control agents available on the retail market such as parasitic nematodes do not sustain themselves or spread on their own once they are released.
- ◆ **Home remedies:** Many home remedies have been devised to control fire ants (see [Are There Any Home Remedies that Will Kill Fire Ants?](#)). Drenching a mound with 2 to 3 gallons of almost boiling water eliminates ant colonies about 60 percent of the time, but it will also kill plants the water contacts. This method is labor-intensive and the hot water must be handled carefully. Some home remedies, such as applying instant grits, molasses, aspartame, or club soda to ant mounds do not work. Pouring chlorine, ammonia, gasoline, or diesel fuel on mounds frequently causes fire ant colonies to relocate but can contaminate the soil and groundwater, is dangerous, and strongly discouraged.
- ◆ **Organic products:** A few products are certified as organic (see [A Review of "Organic" and Other Alternative Methods for Fire Ant Control](#)). These include ingredients such as d-lim-

onene, an extract from citrus oil, and spinosad, a chemical complex produced by a soil microbe and formulated as a bait or liquid ant mound drench treatment.

- ◆ **Chemical control:** The use of insecticides for fire ant control is regulated by the Environmental Protection Agency. Approved products must be used according to label directions. Read the label carefully! An approved product is one that has directions for fire ant control on the label. Be sure the label lists directions for where you intend to use it, particularly if you will be treating a vegetable garden or other food production site (see [Ants and Electrical Equipment](#)). Products for use in electrical utility boxes and indoors may be available only at specialty stores. Some products are for use only by professional pest control operators.

Most active ingredients are marketed under more than one brand or trade name. Product names and the ingredients they contain change over time. This publication refers to the generic names of the active ingredient contents in insecticides, which you should see on the product labels. Some sample trade names are given as well.

Products are formulated as dusts, granules, liquid drenches, or baits. They are applied either to individual ant mounds or across the surface of the ground (broadcast). The various active ingredients affect ants in different ways.

Most active ingredients are contact insecticides that affect the nervous system of ants. Contact insecticides include acephate (Orthene), carbaryl (Sevin), fipronil (Top Choice broadcast granules or Taurus G insecticide granules, both are restricted-use professional products), pyrethrins, pyrethroids (bifenthrin, beta-cyfluthin, cyfluthrin, cypermethrin, deltamethrin, gamma-cyhalothrin, lambda-cyhalothrin, permethrin, esfenvalerate, tefluthrin, tralome-



Handheld spreader application for fire ant treatment. (Photo courtesy of L. Lennon)

thrin, or zeta-cypermethrin), and liquid spinosad formulations. These ingredients vary in how quickly they kill ants and how long they remain in the environment. Natural pyrethrins and synthetic pyrethroid ingredients kill ants in minutes. Acephate and carbaryl take about one day, while granular fipronil may take 4 to 6 weeks to eliminate colonies. Hot water, pyrethrins, and d-limonene treatments have little or no lasting effect. Carbaryl, spinosad, and acephate break down in a matter of days to weeks. Pyrethroids can remain in the environment for weeks to months, while fipronil can persist as long as a year.

Baits contain active ingredients dissolved in a substance ants eat or drink. Some bait ingredients affect the nervous system. Many of these are professional-use products available only at specialty stores. These include abamectin (Ascend, Awards II, Clinch, Optigard), indoxacarb (Advion), metaflumazone (Altrevin, Siesta), spinosad (Ferti-Lome Come And Get It! or Payback), and fipronil (MaxForce

FC). Some affect the digestive system (boric acid) or metabolism (hydramethylnon, or Amdro, or ProBait). Other bait ingredients interfere with reproduction or growth. These include methoprene (Extinguish), and pyriproxyfen (Distance or Esteem). Some bait products combine two active ingredients, hydramethylnon and methoprene (AMDRO FireStrike or Extinguish Plus).

To be effective, baits must be fresh and applied when ants are actively foraging. To determine if the time is right for treatment, place a small amount of bait in the area to be treated and see if foraging ants remove it within an hour. Because ants collect bait and return it to the colony, very little insecticide is needed. Baits are ruined by water, so do not water baits after application or apply them when rain is expected.

Control Approaches

The Two-Step Method (For product listing, see [Broadcast Baits for Fire Ant Control](#) and [Fire Ant Control Materials for Alabama Homeowners](#)).

- ◆ **Step 1.** Broadcast a fire ant bait once or twice a year to reduce fire ant colonies by 80 to 90 percent.
- ◆ **Step 2.** Treat nuisance ant mounds such as colonies that move into the bait-treated areas. Step 2 may not be needed.

This is likely to be the most cost-effective and environmentally sound approach to treating medium to large landscape areas. The bait you apply determines how quickly ants will be controlled and how long the effect will last. Faster-acting bait products include indoxacarb (works in 3 to 10 days), hydramethylnon (works in 7 to 14 days for mound treatments and in 2 to 3 weeks when broadcast), and spinosad (works in several weeks). They may need to be reapplied more often than slower-acting and longer-lasting products such as abamectin, fenoxycarb, methoprene, or pyriproxyfen, which work in 1 to 2 months when applied in spring and 6 months when applied in fall. Products that combine fast- and slow-acting ingredients, such as hydramethylnon plus methoprene (Extinguish Plus, Amdro Firestrike), may control ants better because they act quickly and last longer. Certified organic spinosad products such as Ferti-Lome Come And Get It! or Payback Fire Ant Bait can be used for broadcast bait and mound treatments. Use products such



Lawn application treatment for fire ants using a push spreader. (Photo courtesy of P. N. Nester)

as Amdro Pro, Esteem, Extinguish, or Extinguish Plus for livestock pastures.

Always read and follow the application instructions on the label of the product you are using. Use a handheld spreader/seeder for baits that are applied at very low rates such as 1 to 5 pounds of product per acre. Use the push-type spreader for baits that are applied at higher volumes per acre (2 to 5 pounds per 5000 square feet). Use

a vehicle-mounted spreader such as the Herd GT-77 to cover large areas. For home lawns, calculate the area to be treated and use the smallest spreader setting that allows bait to flow. Apply the bait in swaths, crisscrossing swaths if needed, until the specified amount is applied (For larger areas, see [How to Calibrate a Fire Ant Bait Spreader](#)). The agitators in some spreaders may cause bait to cake up so that it does not flow properly.

Treat nuisance ant mounds or colonies with a contact insecticide applied as an individual mound treatment. To allow ants to consume the bait, treat nuisance mounds no sooner than 24 hours after bait application (see also [The Two-Step Method for Home Vegetable Gardens](#)).

Individual Mound Treatments

Although treating ant mounds individually is more labor-intensive and may use more insecticide than other methods, it is a suitable approach for small areas with few fire ant mounds (fewer than 20 per acre) or where you want to preserve native ants. Faster-acting bait products (including hydramethylnon, indoxacarb, spinosad) can be used to treat individual ant mounds and are ideal for treating inaccessible colonies like those nesting under sidewalks, in plant beds, and at the bases of tree trunks. Bait products are also available for dispensing in bait stations, particularly in and around structures.

Ant mound treatment products are available as liquid drenches, injectable aerosols, dusts, or granules that are watered in to the mound. Ants are killed only if the insecticide contacts them, so proper application is essential. These treatments are most effective when ants are nesting close to the mound surface (as they do when the temperature is mild). Colonies should not be disturbed during treatment. If you use a watering can to apply insecticide, do not use the can for other purposes.

Long-residual Broadcast Contact Insecticide Treatments

With this approach, a contact insecticide is applied to the lawn and landscape surface. This is more expensive than other control methods but it may be more effective in smaller areas because ants that move into treated areas will be eliminated as long as the chem-



Fire ant treatment on lawn area using a spreader mounted on an ATV. (Photo courtesy of B. M. Drees)



Individual mound treatment for fire ants. (Photo courtesy of B. M. Drees)

ical is active. Granular products are best applied with a push-type fertilizer spreader and must be watered in after treatment. Granular fipronil products, such as restricted-use professional products Top Choice or Taurus, are slower acting but longer lasting; only one treatment is permitted per year. Faster-acting contact insecticides, such as the pyrethroids (listed above), eliminate ants on the surface for months but may not eliminate colonies nesting deeper in the soil.

Make a Management Plan

Chemical control lasts only as long as the effects of the insecticide used, until new ant colonies move in from untreated areas, or mated queens arrive to start new colonies. You can expect an ant infestation to return to its original level eventually. Thus, keeping fire ants in check requires a commitment of time and money.

To reduce the cost and make control easier, consider making a map of your property. Divide larger landscapes into treatment areas and designate the most appropriate treatment approach for each area. Make and maintain a schedule for the first treatment and any necessary re-treatments.

For example, you might use a long-residual broadcast contact insecticide at regular intervals in high-value or high-traffic areas (near buildings or in play or recreation areas) where maximum control is needed. In other areas, where 80 to 90 percent control of ants is acceptable, you might use the Two-Step Method. Because control lasts longer when large areas are treated, consider participating in a community- or neighborhood-wide treatment program. These have been shown to improve control and reduce cost. If everyone participates by making coordinated treatments, ant colonies will not be able to migrate from property to property and reapplications eliminate newly developing colonies.

The USDA Quarantine

The current USDA quarantine for imported fire ants covers 320 million acres in all or parts of 15 US states and territories (Alabama, Arkansas, California, Florida, Georgia, Louisiana, Mississippi, New Mexico, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and Puerto Rico). The quarantine means that shipments of hay, nursery stock, sod, and other articles from quarantined counties must comply with state regulations and be free of fire ants. Everyone should respect this quarantine in order to slow the spread of imported fire ants.

Additional Resources

For more information regarding fire ant management, see Extension publication *Managing Red Imported Fire Ants in Urban Areas* and *Broadcast Baits for Fire Ant Control* at

<http://AgriLifeBookstore.org>. For fact sheets about managing fire ants in specialty sites such as electrical utilities, vegetable gardens, wild life areas and in apiaries, see <http://fireant.tamu.edu/materials/fact-sheets/>.

For more detailed information on fire ant identification, biology, and management alternatives, contact your county Extension office or a professional pest control operator. Or, explore the website, <http://www.extension.org/fire+ants>.

Also see:

An Economic Impact of Imported Fire Ants in the United States of America

[http://www.extension.org/sites/default/files/Copy of the National Study.pdf](http://www.extension.org/sites/default/files/Copy%20of%20the%20National%20Study.pdf)

Imported Fire Ants: What Are Fire Ants?

<http://www.extension.org/pages/11373/imported-fire-ants-what-are-fire-ants>

Natural Enemies of Fire Ants

<http://www.extension.org/pages/30546/natural-enemies-of-fire-ants>

Are There Any Home Remedies That Will Kill Fire Ants?

<http://www.extension.org/pages/34814/are-there-any-home-remedies-that-will-kill-fire-ants>

A Review of "Organic" and Other Alternative Methods for Fire Ant Control

http://insects.tamu.edu/fireant/materials/factsheets_pubs/pdf/fapfs012.2002rev.pdf

Ants and Electrical Equipment

<http://www.extension.org/pages/30057/ants-and-electrical-equipment>

Fire Ant Control Materials for Alabama Homeowners

<http://www.aces.edu/pubs/docs/A/ANR-0175-A/ANR-0175-A.pdf>

How to Calibrate a Fire Ant Bait Spreader

<http://www.extension.org/pages/12228/how-to-calibrate-a-fire-ant-bait-spreader>

The Two-Step Method for Home Vegetable Gardens

http://www.extension.org/sites/default/files/w/4/42/Veg_garden_twostep.pdf

Acknowledgment

Mike Merchant, David Oi, Fudd Graham, and the eXtension Fire Ant Community of Practice that develops and maintains <http://www.eXtension.org/fire+ants> reviewed this publication.

The information given herein is for educational purposes only. Reference to commercial products or trade names is made with the understanding that no discrimination is intended and no endorsement by the Texas A&M AgriLife Extension Service is implied.

Texas A&M AgriLife Extension Service AgriLifeExtension.tamu.edu

More Extension publications can be found at AgriLifeBookstore.org

Educational programs of the Texas A&M AgriLife Extension Service are open to all people without regard to race, color, sex, religion, national origin, age, disability, genetic information, or veteran status.

The Texas A&M University System, U.S. Department of Agriculture, and the County Commissioners Courts of Texas Cooperating.